

What is claimed is:

1. A pressure vessel for curing, in the field, a repair to a component made of composite material, the vessel comprising:
 - 5 a body having a chamber operable to receive the repair to the composite element;
 - a portal operable to permit a heating element of a heater located inside the chamber to be coupled with a power source located outside the chamber to power the heating element; and
 - 10 a pump operable to pressurize the chamber.
2. The vessel of claim 1 wherein the pump is operable to generate at least one of the following pressures: 60 psi, less than 60 psi, and more than 60 psi.
3. The vessel of claim 1 wherein the chamber is operable to receive the composite element that has the repair.
- 15 4. The vessel of claim 1 wherein the chamber is shaped like a cylinder.
5. The vessel of claim 1 wherein the chamber is shaped like a cylinder and includes a chamber diameter substantially equal to 20 inches.
6. The vessel of claim 1 wherein the chamber is shaped like a cylinder and includes a chamber diameter substantially equal to 20 inches and a chamber length
- 20 substantially equal to 60 inches.
7. The vessel of claim 1 wherein the portal includes an interface operable to releasably couple the heating element with the power source.
8. The vessel of claim 7 wherein the interface is removable from the portal and replaceable with a different interface.
- 25 9. The vessel of claim 7 wherein the interface is operable to releasably couple the heating element with a control unit of the heater that is located outside the

chamber and operable to modify the amount of heat generated by the heating element.

10. The vessel of claim 1 wherein the vessel includes:

5 a first portal operable to permit the heating element to be coupled with the power source;

a second portal operable to permit a temperature sensor of the heater located inside in the chamber to be coupled with a control unit of the heater that is located outside the chamber and operable to modify the amount of heat generated by the heating element; and

10 a third portal operable to permit another temperature sensor of the heater located inside in the chamber to be coupled with the control unit.

11. The vessel of claim 1 further comprising an entry operable to permit the insertion of the repair to the composite element into the chamber and the removal of the repair to the composite element from the chamber.

15 12. The vessel of claim 11 wherein the entry includes a door hingedly coupled with the body and operable to close the entry while the repair cures to maintain the pressure in the chamber.

13. A system for curing, in the field, a repair to a component made of composite material, the system comprising:

20 a heater including a heating element operable to heat the repair to the composite element to a cure temperature; and

a pressure vessel including:

a body defining a chamber operable to receive the repair to the composite element;

25 a portal operable to permit the heating element of the heater that is located inside the chamber to be coupled with a power source located outside the chamber to power the heating element; and

a pump operable to pressurize the chamber.

14. The system of claim 13 wherein:

the heater includes a control unit located outside the chamber and operable to modify the amount of heat generated by the heating element; and the portal is operable to permit the heating element to be coupled with the control unit.

15. The system of claim 13 wherein:

the heater includes at least two temperature sensors located in the chamber, and a control unit located outside the chamber that is operable to monitor the temperatures of the sensors and modify the amount of heat generated by the heating element according to the temperatures of the sensors; and the portal is operable to permit the temperature sensors to be coupled with the control unit.

16. The system of claim 13 wherein:

the heater includes at least two temperature sensors located in the chamber, and a control unit located outside the chamber that is operable to monitor the temperatures of the sensors and modify the amount of heat generated by the heating element according to the temperatures of the sensors; and the vessel includes:

a first portal operable to permit the heating element to be coupled with the power source,

a second portal operable to permit a temperature sensor to be coupled with the control unit,

a third portal operable to permit another temperature sensor to be coupled with the control unit.

17. The system of claim 13 wherein the pump is located outside the chamber.

18. A method for curing, in the field, a repair to a component made of composite material, the method comprising:

inserting the repair to the composite element into a chamber of a pressure vessel;

locating a heating element of a heater inside the chamber;

pressurizing the chamber to cure the repair to the composite element; and

5 heating the repair with the heating element to a cure temperature to cure the repair.

19. The method of claim 18 wherein inserting the repair to the composite element into the chamber of the pressure vessel includes inserting the composite element into the chamber of the pressure vessel.

10 20. The method of claim 18 wherein pressurizing the chamber includes injecting air into the chamber.

21. The method of claim 18 wherein locating the heating element inside the chamber includes coupling the heating element with the repair to the composite element.

15 22. The method of claim 18 wherein heating the repair to the composite element includes powering an electric blanket.

23. The method of claim 18 further comprising:

locating a control unit of the heater outside the chamber, and

coupling the heating element with the control unit through portal of the pressure vessel.

20 24. The method of claim 18 further comprising reducing the pressure in the chamber.